

<b>Laboratory</b>	<b>Electrical Research and Development Association, ERDA Road, Makarpura Industrial Esate, Makarpura, Vadodara, Gujarat</b>		
<b>Accreditation Standard</b>	<b>ISO/IEC 17025: 2005</b>		
<b>Discipline</b>	<b>Chemical Testing</b>	<b>Issue Date</b>	<b>02.04.2015</b>
<b>Certificate Number</b>	<b>T-0660</b>	<b>Valid Until</b>	<b>30.03.2017</b>
<b>Last Amended on</b>	<b>-</b>	<b>Page</b>	<b>1 of 8</b>

<b>S.No.</b>	<b>Product / Material of Test</b>	<b>Specific Test Performed</b>	<b>Test Method Specification against which tests are performed</b>	<b>Range of Testing / Limits of Detection</b>
<b>I.</b>	<b>PAINTS AND SURFACE COATING</b>			
<b>1.</b>	<b>Paint &amp; Varnish</b>	Density/Specific Gravity	IS 10026 (Part 2): 1999 Clause. 4	0.60 to 1.20
		Viscosity (Ford Cup)	IS 10026 (Part 2): 1999 Clause. 5	50 s to 200 s
		Non Volatile Matter	IS 10026 (Part 2): 1999 Clause. 6	20 % to 60 %
		Drying time in Thin Film	IS 10026 (Part 2): 1999 Clause. 7	10 s to 48 hr
		Ability to Cure in Considerable Thickness & Check for Resoftening	IS 10026 (Part 2): 1999 Clause. 10 & 11	Qualitative
		Stability of Varnish in an Open Vessel	IS 10026 (Part 2): 1999 Clause. 14	Qualitative
		Resistance to Insulating Liquid	IS 10026 (Part 2): 1999 Clause. 17	Qualitative
		Flexibility Test	IS 10026 (Part 2): 1999 Clause. 16	Qualitative
		Dilution Ability	IS 10026 (Part 2): 1999 Clause. 9	Qualitative
		Reaction of Varnish with Copper	IS 10026 (Part 2): 1999 Clause. 12	Qualitative
		Stability of Varnish in Enclosed Vessel	IS 10026 (Part 2): 1999 Clause. 13	Qualitative

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<b>Last Amended on</b>	<b>-</b>	<b>Page</b>	<b>2 of 8</b>

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<b>II. ADHESIVES</b>				
<b>1.</b>	<b>Pressure Sensitive Adhesive Tape</b>	Width	IS 7809 (Part 1): 1975 Clause. 6.2	10 mm to 100 mm
		Thickness	IS 7809 (Part 2): 1977 Clause. 3	0.1 mm to 5mm
		Length	IS 7809 (Part 1): 1975 Clause. 6.3	300 mm to 25 m
		Adhesion to Steel	IS 809 (Part 2): 1977 Clause. 10.3.2	1 N per 10 mm width to 10 N per 10 mm width
		Adhesion to Backing	IS 7809 (Part 2): 1977 Clause. 10.3.3	1 N per 10m width to 10 N per 10m width
		Electric Strength after Humid Conditioning	IS 7809 (Part 2): 1977 Clause. 12	0.5 kV/mm to 15 kV/mm
		Stability to Accelerated Ageing	IS 7809 (Part 3/Sec I): 1986 Clause. 4.8	1 N to 10 N per 10 mm width
		Flammability Test	IS 7809 (Part 2): 1977 Clause. 6	Qualitative
<b>III. PAPER AND PULP</b>				
<b>1.</b>	<b>Insulating Paper</b>	Thickness	IS 9335 (Part 2): 1998 Clause. 2 IEC 60554-2: 2001 Clause. 2	0.1 mm to 25 mm
		Substance	IS 9335 (Part 2): 1998 Clause. 3 IEC 60554-2: 2001 Clause. 6	0.1 g/m <sup>2</sup> to 200 g/m <sup>2</sup>

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**Accreditation Standard** ISO/IEC 17025: 2005

**Discipline** Chemical Testing **Issue Date** 02.04.2015

**Certificate Number** T-0660 **Valid Until** 30.03.2017

**Last Amended on** - **Page** 3 of 8

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Insulating Paper	Apparent Density	IS 9335 (Part 2): 1998 Clause. 4 IEC 60554-2: 2001 Clause. 7	0.1 g/cm <sup>3</sup> to 5 g/cm <sup>3</sup>
		Tensile Strength and Elongation Break	IS 9335 (Part 2):1998 Clause. 5 IEC 60554-2: 2001 Clause. 8 Elongation at break,%	0.5 Nm/g to 200 Nm/g  Upto 200 %
		Internal Tearing Resistance	IS 9335 (Part 2): 1998 Clause. 6 IEC 60554-2: 2001 Clause. 9	2 mNm <sup>2</sup> /g to 25 mNm <sup>2</sup> /g
		Moisture Content	IS 9335 (Part 2): 1998 Clause. 10 IEC 60554-2: 2001 Clause. 13	0.5 % to 15 %
		Ash Content	IS 9335 (Part 2): 1998 Clause. 11 IEC 60554-2: 2001 Clause. 14	0.05 % to 3 %
		Conductivity of Aqueous Extract	IS 9335 (Part 2): 1998 Clause. 12 IEC 60554-2: 2001 Clause. 15	2 mS/m to 20 mS/m
		pH Value of Aqueous Extract	IS 9335 (Part 2): 1998 Clause. 13 IEC 60554-2: 2001 Clause. 16	4.0 to 12

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<b>Certificate Number</b>	<b>T-0660</b>	<b>Valid Until</b>	<b>30.03.2017</b>
<b>Last Amended on</b>	<b>-</b>	<b>Page</b>	<b>4 of 8</b>

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	<b>Insulating Paper</b>	Air Permeability	IS 9335 (Part 2): 1998 Clause. 18 IEC 60554-2: 2001 Clause. 21	0.005 $\mu\text{m}/\text{Pa.s}$ to 8.0 $\mu\text{m}/\text{Pa.s}$
		Water Absorption	IS 9335 (Part 2): 1998 Clause. 19 IEC 60554-2: 2001 Clause. 22	1 mm to 35 mm
		Heat Stability -Bursting Strength -Conductivity	IS 9335 (Part 2): 1998 Clause. 24 IEC 60554-2: 2001 Clause. 27	1 % to 25 % 1 mS/m to 30 mS/m
<b>2.</b>	<b>Press Board</b>	Thickness	IS 1576: 1992 Clause. 5.2	0.1 mm to 25 mm
		Density	IS 1576: 1992 Clause. 5.4	0.5 g/cm <sup>3</sup> to 2 g/cm <sup>3</sup>
		Tensile Strength and Elongation at Break	IS 1576: 1992 Clause. 5.6	100 kg/cm <sup>2</sup> to 2000 kg/cm <sup>2</sup> 0.1 kg/m <sup>2</sup>
		Moisture Content	IS 1576: 1992 Clause. 5.15	1% to 15%
		Ash Content	IS 1576: 1992 Clause. 5.16	0.1 % to 5 %
		Conductivity of Aqueous Extract	IS 1576: 1992 Clause. 5.13	10 $\mu\text{S}/\text{cm}$ to 200 $\mu\text{S}/\text{cm}$
		pH of Aqueous Extract	IS 1576: 1992 Clause 5.14	4 to 12

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**Certificate Number** T-0660 **Valid Until** 30.03.2017

**Last Amended on** - **Page** 5 of 8

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	<b>Press Board</b>	Oil Absorption	IS 1576: 1992 Clause. 5.11	5 % to 40 %
		Cohesion between Plies	IS 1576: 1992 Clause. 5.10	Qualitative
		Machine Ability	IS 1576: 1992 Clause. 5.12	Qualitative
		Shrinkage	IS 1576: 1992 Clause. 5.8	0.01 % to 10 %
		Flexibility	IS 1576: 1992 Clause. 5.9	Qualitative
<b>3.</b>	<b>Precompressed Press Board</b>	Thickness	IEC 60641-2: 2004 Clause. 5	0.5 mm to 10 mm
		Density	IEC 60641-2: 2004 Clause. 6	0.5 g/cm <sup>3</sup> to 2 g/cm <sup>3</sup>
		Tensile Strength and Elongation at Break	IEC 60641-2: 2004 Clause. 7	Tensile strength 20MPa to 200 MPa Elongation- 0.5 % to 20 %
		Compressibility	IEC 60641-2: 2004 Clause. 10	C % 0.5 % to 20 % Crev % 25 % to 75 %
		Moisture content	IEC 60641-2: 2004 Clause. 13	1 % to 15 %
		Ash Content	IEC 60641-2: 2004 Clause. 14	0.1 % to 3 %

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<b>Certificate Number</b>	<b>T-0660</b>	<b>Valid Until</b>	<b>30.03.2017</b>
<b>Last Amended on</b>	<b>-</b>	<b>Page</b>	<b>6 of 8</b>

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	<b>Precompressed Press Board</b>	Conductivity of Aqueous Extract	IEC 60641-2: 2004 Clause. 15	1 mS/m to 20 mS/m
		pH Value of Aqueous Extract	IEC 60641-2: 2004 Clause. 16	4 to 12
		Oil Absorption	IEC 60641-2: 2004 Clause. 17	2 % to 25 %
		Shrinkage	IEC 60641-2: 2004 Clause. 11	0.01 % to 12 %
<b>IV. PETROLEUM</b>				
<b>1.</b>	<b>Transformer Oil</b>	Furan Compounds	IEC 1198: 93 Clause. 9.1	0 to 30 mg/Kg 0.01 mg/Kg
		PNA Analysis	IS 13155: 91 (RA 2006) Clause. 5.0	0 to 100 % 0.1 %
<b>V. PLASTICS AND RESINS</b>				
<b>1.</b>	<b>Plastics</b>	Oxidative Induction Time	ASTM D 3895: 2004 Clause. 10.0	1 min to 300 min
<b>VI. METAL AND ALLOYS</b>				
<b>1.</b>	<b>Copper</b>	Copper	IS 440: 1964 (RA 2006) Clause. 4.4	90 % to 100 %
<b>2.</b>	<b>Stainless Steel</b>	Carbon	INS 320 a ASTM E 1086: 08	0.004 % to 1 %
		Sulphur	Clause. 13.0	0.002 % to 0.2 %

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**Accreditation Standard** ISO/IEC 17025: 2005

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**Certificate Number** T-0660 **Valid Until** 30.03.2017

**Last Amended on** - **Page** 7 of 8

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	Stainless Steel	Phosphorus		0.005 % to 0.2 %
		Manganese		0.01 % to 2 %
		Silicon		0.006 % to 2 %
		Nickel		0.01 % to 25 %
		Chromium		0.01 % to 30 %
		Molybdenum		0.005 % to 5 %
		Copper		0.01 % to 1 %
3.	Aluminum	Vanadium	INS 320 a	0.002 % to 0.5 %
		Chromium	ASTM E-1251: 07 Clause. 16.0	0.001 % to 0.5 %
		Titanium		0.0068 % to 0.1 %
		Tin		0.005 % to 0.20 %
		Lead		0.0033 % to 0.5 %
		Zinc		0.01 % to 0.5 %
		Manganese		0.004 % to 1 %
		Iron		0.07 % to 1 %
		Silicon		0.028 % to 10 %
		Magnesium		0.001 % to 1 %
	Zirconium		0.0005 % to 0.5 %	

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**Certificate Number** T-0660 **Valid Until** 30.03.2017

**Last Amended on** - **Page** 8 of 8

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	<b>Aluminum</b>	Bismuth		0.005 % to 0.5 %
		Copper		0.01 % to 2 %
		Nickel		0.008 % to 0.5 %

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